

REMARKS/ARGUMENTS

Claims 1-27 and 44-48 remain in the application for further prosecution.

Claim Rejections – 35 U.S.C. § 112, ¶ 2

Claims 17-18 and 25-26 were rejected under 35 U.S.C. § 112, ¶ 2, on the basis that a listening device cannot provide listening for a user by way of a non-audio frequency signal, and therefore the term “listening device” is indefinite. Although Applicants disagree that a listening device that processes signals other than audio frequency signals is indefinite, claim 17 has been amended to replace “listening device” with “hearing aid.” Applicants respectfully submit that the rejection is overcome by this amendment.

Claim Rejections – 35 U.S.C. § 103

Claims 1-27 and 44-48 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Mead (U.S. Patent No. 6,044,162) et al. in view of Groppe (U.S. Patent No. 5,086,464). Applicants respectfully traverse these rejections and submit that the claims are patentable over Mead and Groppe for at least the following reasons.

Regarding claims 1, 15, 17, and 48, the Office Action indicates that Mead does not teach a telecoil as claimed, an integrated or hybrid circuit as claimed, or a filter as claimed. Groppe does not disclose a filter or an integrated or hybrid circuit having an amplifier and a filter as claimed.

The Office Action does not cite to any disclosure in Mead that suggests combining the hearing aid system 10 disclosed in Mead with a telecoil. Mead explicitly provides that “an input transducer 12 converts acoustical energy into an analog electrical signal.” Mead, col. 5, ll. 43-44 (emphasis added). Similarly, nothing in Groppe suggests combining the magnetic induction pickup 33 with an amplifier and filter as claimed. For these reasons alone, the claims are patentable over Mead and Groppe.

Applicants respectfully traverse the assertion in the Office Action that it is very well known in the art to provide integrated circuit technology for a hearing device. There is no evidence in the record that it is very well known to integrate a filter and amplifier into an integrated circuit in a hearing aid. Even further, there is no evidence in the record that it is very well known to couple an integrated circuit having a filter and amplifier to a telecoil in a hearing aid. Groppe does not disclose a filter or an integrated circuit, and Mead does not disclose, teach,

or suggest a telecoil or an integrated circuit. Rather, Mead treats the discrete blocks shown in FIGS. 8 and 9 as separate components which are connected together. *See, e.g.*, Mead, col. 18, l. 37 to col. 19, l. 45.

Applicants respectfully traverse the assertion in the Office Action that it is very well known in the art to select a filter with desirable characteristics for a specific application. There is no evidence in the record that it is very well known to integrate a filter having a selected pass band in an audio frequency range with an amplifier into an integrated circuit in a telecoil system. For these additional reasons, Applicants submit that claims 1, 15, 17, and 48 is allowable.

Regarding the rejected dependent claims, they are allowable for at least the reason that the respective independent claims from which they depend are allowable. The following dependent claims are allowable for at least the following additional reasons.

Regarding claim 2, Mead does not disclose, teach, or suggest integrating a second amplifier onto an integrated circuit including a filter and a first amplifier.

Regarding claim 3, Mead does not disclose, teach, or suggest a signal processor receiving a first filter signal and producing a second amplified output signal, the signal processor being integrated onto an integrated circuit with a first filter and a first amplifier.

Regarding claim 4, Mead does not disclose, teach, or suggest a second filter integrated on an integrated circuit having a first amplifier and a first filter, the second filter having a pass band different from a selected pass band of a first filter, the second filter receiving a first amplified signal from a first amplifier.

Regarding claims 7, 16, and 27, Applicants respectfully traverse the assertion in the Office Action that providing a center-tapped telecoil as claimed for a hearing aid is very well known in the art. Mead does not disclose a telecoil, and Groppe does not teach or suggest a center-tapped telecoil. The fact that center-tapped telecoils in general may be known in the art does not have any bearing on the question of whether a center-tapped telecoil as claimed in claims 7, 16, and 27 is patentable. There is no evidence in the record that such a center-tapped telecoil is very well known in the art.

Regarding claim 26, Groppe does not teach or suggest including a capacitor in parallel with a telecoil for increasing the sensitivity of the telecoil to a non-audio frequency signal.

Method claims 8-14 are allowable for at least the same reasons that claims 1-7 are allowable. Method claim 8 is allowable for at least the additional reason that neither Mead nor Groppe, alone or in combination, teaches or suggests converting electromagnetic radiation to electrical signals and performing filtering and amplifying on a single integrated circuit. Method claims 9-14 are allowable for at least the additional reason that claim 8 is allowable.

Regarding claim 18, Mead does not disclose an integrated circuit having a first filter, a second filter, and a third filter for passing a non-audio frequency signal. Mead explicitly teaches that the input transducer 12 converts acoustical energy into an analog electrical signal. Thus, the bandpass filter 116-3 shown in Mead is passing an audio frequency signal, not a non-audio frequency signal as claimed in claim 18. In addition, there is no teaching or suggestion in Mead or Groppe to integrate a third filter onto an integrated circuit having a first filter, a second filter, and a first amplifier as claimed.

Regarding claim 19, neither Mead nor Groppe discloses differentially coupling a telecoil and an amplifier in a telecoil system.

Regarding claim 20, neither Mead nor Groppe discloses coupling a telecoil and an amplifier in a single-ended fashion.

Regarding claims 21 and 22, Applicants respectfully traverse the assertions in the Office Action that it is very well known to provide electrostatic discharge protection circuitry or electromagnetic interference protection circuitry in a telecoil system for a listening device. There is no evidence in the record that such circuitry is well known in the art.

Claim 24 is allowable for at least the additional reason that Mead does not disclose an analog-to-digital converter for providing a digital output of a non-audio frequency signal. Nowhere does Mead teach or suggest a non-audio frequency signal, but rather explicitly discloses that the input signal is in the form of acoustical energy.

Claim 25 is allowable for at least the additional reason that Mead does not disclose a microcontroller for processing a non-audio frequency signal, the microcontroller providing functions for the operation of a hearing aid in response to the non-audio frequency signal. Nowhere does Mead teach or suggest a non-audio frequency signal, but rather explicitly discloses that the input signal is in the form of acoustical energy.

Method claims 44-47 are allowable for at least the same reasons that claims 15-27 are allowable. Claim 44 is allowable for at least the additional reason that Mead does not disclose processing, in an integrated circuit, a digital signal converted from an amplified analog signal into at least two digital outputs, one of the outputs being an audio and frequency band output.

Method claim 45 is allowable for at least the additional reason that Mead does not disclose processing, in an integrated circuit, a digital signal into at least two digital outputs, one of the outputs being a control band frequency output. Mead also does not disclose operating a hearing aid in a certain manner corresponding to the control band frequency output.

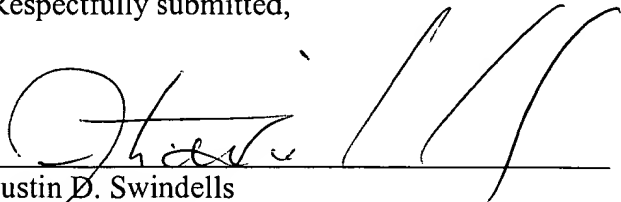
Conclusion

It is the Applicants' belief that all of the claims are now in condition for allowance and action towards that effect is respectfully requested.

If there are any matters which may be resolved or clarified through a telephone interview, the Examiner is requested to contact the undersigned attorney at the number indicated.

A check in the amount of \$420.00 is enclosed for the fees associated with the petition for a two-month extension of time filed herewith. The Commissioner is authorized to charge any additional fees which may be required (except the issue fee) to JENKENS & GILCHRIST, P.C., Deposit Account No. 10-0447(47161-00016USPT).

Respectfully submitted,



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